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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,051	01/22/2004	Peter E. Oettinger	2003627-0006	3799

24280 7590 12/21/2006
CHOATE, HALL & STEWART LLP
TWO INTERNATIONAL PLACE
BOSTON, MA 02110

EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
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2882

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

• Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/763,051

Applicant(s)

OETTINGER ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1-11, 41, and 42 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (claim 1, line 5; replacing "X-Ray" with --X-ray--), (claim 1, line 6; replacing "where in" with --wherein--), (claim 1, line 6; replacing "Tube" with -tube--), (claim 5, line 2; replacing "material" with --encapsulant--), (claim 8, line 2; replacing "material" with --encapsulant--), and (claim 9, line 2; replacing "material" with --encapsulant--).

Claims 2-11, 41, and 42 are objected to by virtue of their dependency. For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 9, 11, 30, 31, 34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skillicorn (US 4694480) in view of Sugiyama (JP 60-216298).

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3. Regarding claims 1 and 30, Skillicorn discloses an apparatus comprising an X-ray tube that emits X-rays (fig. 6, #26), a high voltage power supply (fig. 6, #66) coupled to said X-ray tube that supplies a high voltage for use with said x-ray tube, and electrical connection (fig. 8c, #78) that connects the X-ray tube to the high voltage power supply, wherein the X-ray tube, the high voltage power supply, and the electrical connection are encapsulated in a solid, electrically-insulating encapsulant with a radio-opaque material including lead, the encapsulant being in intimate contact with the X-ray tube and the high voltage power supply (col. 5, lines 33-37, and col. 6, lines 26-29).

However, Skillicorn fails to disclose radio-opaque lead material distributed within and being substantially free from entrained air.

Sugiyama teaches radio-opaque lead material distributed within and being substantially free from entrained air (abstract and fig. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the apparatus of Skillicorn with the material of Sugiyama, since one would have been motivated to make such a modification for reducing steps and labor (abstract) as shown by Sugiyama.

4. Regarding claims 4 and 34, Skillicorn would necessarily have an amount of said radio-opaque material in accordance with a predetermined degree of radiation attenuation for purposes of shielding a user from unnecessary radiation (col. 6, lines 26-29).

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5. Regarding claims 9, 11, 31, and 39, Skillicorn further discloses a molded complex shape (col. 5, line 31, and fig. 1, #22) and portability (title).

6. Claims 2, 3, 12, 18, 20, 32, 33, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skillicorn and Sugiyama as applied to claims 1 and 30 above, and further in view of Steigerwald (US 4504895).

7. Regarding claims 2, 3, 12, 32, and 33, Skillicorn as modified above suggests an apparatus as recited above. Skillicorn further discloses electrical connections (fig. 8c, #78 and connection between #66 and 84) and a high-voltage multiplier (fig. 8c, #66) driven by a transformer (fig. 8c, #82).

However, Skillicorn fails to disclose a resonant converter that drives a high voltage power supply via an amplitude modulated waveform drive at a substantially resonant frequency, and a step up transformer connected to said resonant converter.

Steigerwald teaches a resonant converter that drives a high voltage power supply (abstract, lines 1-3) via an amplitude modulated waveform drive at a substantially resonant frequency (col. 4, lines 40-48) and a step up transformer (fig. 4, #35) connected to said resonant converter.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus of Skillicorn as modified above with the converter and transformer of Steigerwald, since one would have been motivated to make such a

modification for more adjustability and faster response time (col. 1, lines 13-15 and 49-55) as implied from Steigerwald.

8. Regarding claims 18 and 20, Skillicorn further discloses a molded complex shape (col. 5, line 31, and fig. 1, #22) and portability (title).

9. Regarding claims 42-44, Steigerwald further teaches wherein the amplitude modulated waveform drive responds to a sensed resonant frequency (col. 4, lines 40-48).

10. Claims 5, 14, 21, 23, 25, 29, and 35 are rejected as being under 35 U.S.C. 103(a) as being unpatentable over Skillicorn, Sugiyama, and Steigerwald as applied to claims 1, 12, and 30 above, and further in view of Malcolm et al. (US 4979198).

11. Regarding claims 5, 14, 21, and 35, Skillicorn as modified above suggests an apparatus and method as recited above.

However, Skillicorn fails to disclose a thin conductive layer over an electrically insulating material to provide electric shielding.

Malcolm et al. teaches a thin conductive layer over an electrically insulating material to provide electric shielding (col. 10, lines 15-23).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus and method of Skillicorn as modified above

with the conductive layer of Malcolm et al., since one would have been motivated to make such a modification for better protection (col. 10, lines 15-23) as implied from Malcolm et al.

12. Regarding claim 23, Skillicorn further discloses encapsulating power (fig. 6, #66) and control (fig. 6, #78) circuit components in a solid block including a radio-opaque material (fig. 6, #42).

13. Regarding claims 25 and 29, Skillicorn would necessarily have an amount of said radio-opaque material in accordance with a predetermined degree of radiation attenuation for purposes of shielding a user from unnecessary radiation (col. 6, lines 26-29), and portability (title).

14. Claims 6-8, 15-17, 26-28, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skillicorn, Sugiyama, Steigerwald, and Malcolm et al. as applied to claims 5, 14, 21, and 35 above, and further in view of Davies (US 5927482).

Skillicorn as modified above suggests an apparatus and method as recited above.

However, Skillicorn fails to disclose a thin conductive layer composed from a thin metal foil made from at least one of copper and aluminum adhered adhesively.

Davies teaches a thin conductive layer composed from a thin metal foil adhered adhesively (col. 2, lines 51-60). Davies further teaches using copper or aluminum for shielding (col. 2, lines 47-53).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus and method of Skillicorn as modified above

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with the metal foil of Davies, since one would have been motivated to make such a modification for better protection (col. 2, lines 51-52) as implied from Davies.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus and method of Skillicorn as modified above with copper or aluminum, since it is within the general skill of a worker in the art to select a known material on the basis of its suitability. One would have been motivated to use copper or aluminum for better protection (col. 2, lines 47-52) as implied from Davies.

15. Claims 10, 19, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skillicorn, Sugiyama, and Steigerwald as applied to claims 1, 12, and 30 above, and further in view of Courtois (US 3643094).

Skillicorn as modified above suggests an apparatus as recited above.

However, Skillicorn fails to disclose an x-ray tube and power supply connected by a coaxial cable.

Courtois teaches an x-ray tube and power supply connected by a coaxial cable (col. 1, lines 14-16).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus of Skillicorn as modified above with the coaxial cable of Courtois, since one would have been motivated to make such a modification for preventing break down (col. 1, lines 14-16) as implied from Courtois.

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16. Claims 13, 22, and 41 are rejected as being under 35 U.S.C. 103(a) as being unpatentable over Skillicorn, Sugiyama, Steigerwald, and Malcolm et al. as applied to claims 1, 12, and 21 above, and further in view of Holland, Sr. et al. (US 6320936).

17. Regarding claims 13 and 22, Skillicorn as modified above suggests an apparatus and method as recited.

However, Skillicorn fails to disclose epoxy.

Holland, Sr. et al. teaches epoxy (col. 7, line 6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus and method of Skillicorn as modified above with the epoxy of Holland, Sr. et al., since it is within the general skill of a worker in the art to select a known material on the basis of its suitability. One would have been motivated to make such a modification for more easily shaping a radiation absorbing material to a component (col. 7, lines 1-15) as implied from Holland, Sr. et al.

18. Regarding claim 41, Skillicorn as modified above suggests an apparatus as recited above.

However, Skillicorn fails to disclose lead oxide.

Holland, Sr. et al. teaches lead oxide (col. 7, line 13).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the apparatus of Skillicorn as modified above with the lead oxide of Holland, Sr. et al., since it is within the general skill of a worker in the art to select a known material on the basis of its suitability. One would have been motivated to make such a

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modification for more easily shaping radiation absorbing material while blocking radiation (col. 7, lines 1-15) as implied from Holland, Sr. et al.

19. Claim 24 is rejected as being under 35 U.S.C. 103(a) as being unpatentable over Skillicorn, Sugiyama, and Malcolm et al. as applied to claim 21 above, and further in view of Dewey (US 4143009).

Skillicorn as modified above suggests a method as recited above.

However, Skillicorn fails to disclose casting using a two-part epoxy-resin system.

Dewey teaches casting using a two-part epoxy-resin system (title and abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the method of Skillicorn as modified above with the casting system of Dewey, since one would have been motivated to make such a modification for reducing stresses and warping (col. 1, lines 42-47) as implied from Dewey.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting.

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ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

20. Claims 1-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8-19, 63-74, and 83 of copending Application No. 10/370,783 in view of Sugiyama.

Application No. 10/370,783 claims a module and method comprising an x-ray tube, a high-voltage supply, and electrical connection, wherein the tube, power supply, and electrical connection are encapsulated in an electrically-insulating encapsulant, radio-opaque material including at least one of a lead compound using a two-part epoxy-resin casting system, a resonant converter, a step up transformer, high-voltage multiplier, wherein an amount of said material is in accordance with a predetermined degree of radiation attenuation, a thin conductive layer formed from a metal foil made of copper adhered adhesively, wherein the electrically-insulating material is molded into a complex shape, wherein the power supply is connected by a coaxial cable, and wherein the module is portable (claims 8-19, 63-74, and 83).

However, Application No. 10/370,783 fails to claim lead distributed within.

Sugiyama teaches lead distributed within (abstract and fig. 1).

It would have been obvious, to one having ordinary skill in the art, to conclude that the invention defined in the claims at issue would have been an obvious variation of the invention defined in the claims of Application No. 10/370,783 with the material of Sugiyama, since it is within the general skill of a worker in the art to select a known material on the basis of its

suitability. One would have been motivated to make such a modification for reducing steps and labor (abstract) as implied from Sugiyama.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

21. Applicant's arguments with respect to claims 1-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



gk



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